

Programmatic considerations have made it clear that there is virtually no chance that launch of the Pluto-Kuiper Express mission will occur in 2003 rather than in 2004, as is the current baseline. Therefore, the requirement for Pluto-Kuiper Express proposers to assess the impact of delivering their flight instrumentation early (by August 1, 2002) is deleted. Changes to the AO and Program Library documents are:

1. AO, Section 4.2.4, delete the last paragraph.
2. AO Appendix C, Section 3.6, delete item 4.
3. Outer Planets Program Description in Program Library, Section 2, last paragraph, change last two sentences as follows:

“Gate 2 follows Gate 1 by one year ~~and represents the latest allowable date for getting the Pluto propulsion subsystem contractor started.~~ If a decision is made that Europa Orbiter will not be ready for the 2003 launch, it will be delayed to 2004, ~~and the Pluto-Kuiper Express launch date may be moved from December 2004 to November 2003,~~ as shown in Figure 2.”

Also, delete the earlier Pluto launch schedule shown in the bottom half of Figure 2.

4. Pluto-Kuiper Express Mission and Project Description in Program Library, Section 2.2.1, delete the last paragraph. Section 2.2.1.1, change the first three paragraphs as follows:

“The reference Pluto-Kuiper Express (Pluto) mission calls for a launch in December 2004 and uses a Jupiter Gravity Assist (JGA) trajectory to send the spacecraft to Pluto and Charon in 8 years (see Figure 4), although actual flight time will depend on launch conditions, spacecraft mass, and Jupiter flyby distance. ~~The opportunity to switch the launch order of the Pluto and the Europa Orbiter mission, however, is a key requirement of the program readiness strategy.~~ Figure 5 shows the flight system mass tradeoff with flight time to Pluto for ~~both the 2003 and 2004 JGA trajectory opportunities~~ opportunity.”

Figure 6 shows the spacecraft trajectory through the Jovian system for the reference Pluto-Kuiper Express mission. The flight time determines the conditions of the JGA, the most important of which to the spacecraft is perijove radius. Figure 7 below illustrates the change in the spacecraft’s perijove radius with respect to flight time for ~~both the 2003 and 2004 JGA trajectories~~ trajectory. This effect on flyby radius at Jupiter has a significant impact on spacecraft radiation exposure from the intense environment at Jupiter as the spacecraft passes through the Jovian system (see the Environmental Requirements document of the Outer Planets Program Library, available over the Internet through URL <http://outerplanets.LaRC.NASA.gov/outerplanets>, for total ionizing radiation dose information).

As one might expect, the flight time also impacts the Pluto flyby itself. Figure 8 shows the incoming hyperbolic excess speed, V_{∞} , at Pluto versus flight time for ~~both the 2003 and 2004 JGA trajectories~~ trajectory. This translates directly into how fast the spacecraft passes through the Pluto/Charon system. As Figure 8 shows, as the flight time increases, the V_{∞} at Pluto decreases. This clearly has an impact on the entire Pluto - Charon encounter scenario, particularly in the timing of science data collection as well as the constraints on the spacecraft and instruments in terms of slewing, stability, etc.”

Also, delete the data for the 2003 launch opportunity from Figures 5, 7, and 8.